

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the present application.

Listing of Claims:

Claim 1 (original): A digital information carrier characterized by:

comprising a plurality of image objects as constituent elements;

containing cluster information carrier(s) constituted by at least two of the image objects; and

 said cluster information carriers having bit data correlated to relative relationship(s) between said at least two image objects forming the constituent elements.

Claim 2 (original): A digital information carrier as set forth in claim 1, wherein among the relative relationship(s) between the image objects in the plurality constituting said cluster information carrier(s), a relative relationship to which the bit data does not correlate is arbitrarily configurable.

Claim 3 (currently amended): A digital information carrier as set forth in claim 1 [[or 2]], wherein at least one of the image objects forming the constituent elements of one of said cluster information carrier(s) forms a constituent element of another of said cluster information carrier(s).

Claim 4 (original): A digital information carrier characterized by:

comprising a plurality of image objects as constituent elements;

containing cluster information carrier(s) constituted by at least two of the image objects;

said cluster information carrier(s) having
 a condition, correlated to a relative relationship between said at least
 two image objects forming the constituent elements, for determining whether
 image objects constitute a cluster information carrier, and
 bit data correlated to said cluster information carrier(s) as units.

Claim 5 (original): A digital information carrier as set forth in claim 4, wherein
the cluster information carrier for which said determination is being made has bit data
correlated to a relative relationship between the plurality of image objects that are
constituent elements.

Claim 6 (currently amended): A digital information carrier as set forth in ~~any~~
~~of claims 1-5~~ claim 1, wherein predetermined information is assigned to a relative
arrangement of said cluster information carriers.

Claim 7 (original): A digital information carrier as set forth in claim 6, wherein
the information assigned to said relative arrangement is information relating to a
unifying rule for generating an information item by unifying bit data correlated to a
plurality of said cluster information carriers.

Claim 8 (currently amended): A digital information carrier as set forth in
claim 6 [[or 7]], wherein the relative arrangement of said cluster information carriers is
assigned information relating either to coordinate axes for, or to the orientation of, an
array of said cluster information carriers.

Claim 9 (original): A digital information carrier as set forth in claim 8, wherein
a layout spacing between said cluster information carriers as arranged 2-
dimensionally is defined for each coordinate axis.

Claim 10 (currently amended): A digital information carrier as set forth in claim 8 [[or 9]], wherein:

among a number d (wherein $d \geq 4$) of said cluster information carriers arranged consecutively, a number e of cluster information carriers satisfying the condition $e < d/2$ are arranged offset in a direction orthogonal to an arraying direction formed by the remaining number $d - e$ of cluster information carriers; and

the information relating to the coordinate axes is assigned to the arraying direction, and the information relating to orientation is assigned to the offset.

Claim 11 (original): A digital information carrier characterized in that:

configuration of a logical block formed by unifying a plurality of unit information carriers being the minimum units for decoding bit data from a digital information carrier is enabled;

an item of information is assigned to an array formed by unifying any number of constituent elements of said logical block concerned; and

configuration of a new logical block by replacing at least one of the constituent elements of said logical block with a unit information carrier neighboring said logical block is enabled.

Claim 12 (original): A digital information carrier as set forth in claim 11, wherein said logical block is constituted from a larger number of said unit information carriers than the number of elements in the array to which said item of information is assigned

Claim 13 (currently amended): A digital information carrier as set forth in claim 11 [[or 12]], wherein said item of information is information with which the layout coordinates of any constituent element of said logical block are specifiable.

Claim 14 (original): A digital information carrier characterized in:
containing a bit matrix V formed by arranging, in matrix form, array elements b_m ($m = 0$ to $n-1$) of a reference-bit array B having a predetermined array length n , wherein bit data is correlated to the bit matrix V ;
that two matrix elements $v(i, j)$ and $v(i+1, j)$ neighboring one (i -axis) of the two array axes of the bit matrix V satisfy

$$v(i, j) = b_m$$

$$v(i+1, j) = b_{m+1}; \text{ and}$$

that two matrix elements $v(i, j)$ and $v(i, j+1)$ neighboring the other array axis (j -axis) of the bit matrix V satisfy, letting the amount by which the array elements b_m are offset toward the j -axis be a ,

$$v(i, j) = b_m$$

$$v(i, j+1) = b_{m+a},$$

wherein the amount of offset a toward the j -axis is an integer equal to or greater than 2.

Claim 15 (original): A digital information carrier as set forth in claim 14, wherein:

for a logical block that is a partial matrix in the bit matrix V , in which any one matrix element $v(i, j)$ of the bit matrix V is the starting point, and the array length along the i -axis is the offset a ,

with the positive direction of the i -axis being a main scanning direction and the positive direction of the j -axis being a sub-scanning direction, a bit array that is identical with a partial array of the reference-bit array B is formable by unifying any of the constituent elements of said logical block.

Claim 16 (original): A digital information carrier as set forth in claim 15, wherein the reference-bit array B is constituted so that partial arrays of predetermined length obtained with arbitrary offsets differ from each other.

Claim 17 (currently amended): A digital information carrier as set forth in claim 15 [[or 16]], wherein:

by replacing the matrix element $v(i, j)$ constituting said logical block and forming the terminus of the array in the main scanning direction,
on the condition that either of the matrix elements $v(i-a, j+1)$ and $v(i+a, j-1)$ neighbors said logical block,

with either of said matrix elements, configuration of a new logical block (virtual block) is enabled.

Claim 18 (currently amended): A digital information carrier as set forth in ~~any of the claims 15-17~~ claim 15, wherein configuration of said new logical block is enabled by removing the matrix element which constitutes the first of said bit arrangement from said logical block, and by adding the matrix element adjacent to the matrix element which constitutes the last of this bit arrangement concerned on the side of the main scanning direction.

Claim 19 (currently amended): A digital information carrier as set forth in ~~any of the claims 15-17~~ claim 15, wherein configuration of said new logical block is

enabled by removing the matrix element which constitutes the last of said bit arrangement from said logical block, and by adding the matrix element adjacent to the matrix element which constitutes the first of this bit arrangement concerned on the opposite side of the main scanning direction.

Claims 20-42 (canceled)